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A systematic meta-review of evaluations of youth violence prevention programs: Common and divergent findings from 25 years of meta-analyses and systematic reviews[☆]

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Abstract

Violence among youth is a pervasive public health problem. In order to make progress in reducing the burden of injury and mortality that result from youth violence, it is imperative to identify evidence-based programs and strategies that have a significant impact on violence. There have been many rigorous evaluations of youth violence prevention programs. However, the literature is large, and it is difficult to draw conclusions about what works across evaluations from different disciplines, contexts, and types of programs. The current study reviews the meta-analyses and systematic reviews published prior to 2009 that synthesize evaluations of youth violence prevention programs. This meta-review reports the findings from 37 meta-analyses and 15 systematic reviews; the included reviews were coded on measures of the social ecology, prevention approach, program type, and study design. A majority of the meta-analyses and systematic reviews were found to demonstrate moderate program effects. Meta-analyses yielded marginally smaller effect sizes compared to systematic reviews, and those that included programs targeting family factors showed marginally larger effects than those that did not. In addition, there are a wide range of individual/family, program, and study moderators of program effect sizes. Implications of these findings and suggestions for future research are discussed.

Keywords

Youth violence; Prevention; Intervention; Meta-review

1. Introduction

Homicide is the second leading cause of death for young people between the ages of 10 and 24 (Centers for Disease Control, Prevention [CDC], 2009a). In 2009, 650,843 assault-related non-fatal injuries in youth age 10 to 24 were treated at emergency departments across the

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U.S. (CDC, 2010). The term youth violence is used to encompass many forms of violence among young people, including more serious forms (e.g., homicide) and behaviors that are less serious in nature (e.g., fighting). Youth violence is thus defined as “the intentional use of force—whether threatened or real—against a person, group, or community that results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment, or deprivation by persons between the ages of 10 and 24 (CDC, 2009b; Dahlberg & Krug, 2002).

A number of individual, family, peer, and community factors have been found to increase the likelihood of an individual's violent offending. Such risk factors have been empirically identified through multiple studies and predict violent behavior longitudinally (Hawkins et al., 2000; Murray & Farrington, 2010). A relatively new area of research in youth violence prevention involves examining protective factors (i.e., variables that have a moderating effect on risk factors) related to violence perpetration. This research can also inform prevention efforts, in that it can identify factors that should be bolstered among youth, families, and in communities in order to prevent violence. Research on risk and protective factors for youth violence perpetration provides a critical starting point for prevention, as this literature has informed the factors that can be targeted for prevention programs.

1.1. Approaches to youth violence prevention

Most youth violence prevention programs target risk and protective factors in order to reduce the likelihood that children and youth will behave violently during adolescence and beyond. Two types of classification systems are frequently applied to prevention approaches: universal/selected/indicated and primary/secondary/tertiary. The universal/selected/indicated (Institute of Medicine, 1994; National Research Council and Institute of Medicine, 2009) distinction describes the intended population of a program, while the primary/secondary/tertiary (Institute of Medicine, 1994; National Research Council and Institute of Medicine, 2009) distinction describes the timing of the prevention approach. In terms of youth violence prevention, universal programs are those administered to everyone within a defined population regardless of risk; selected programs are directed to a population who is at-risk for youth violence but has yet to engage in violent behavior; and indicated programs are those that target individuals who show early signs of engaging in violence (Institute of Medicine, 1994). Primary prevention programs address risk and protective factors to prevent violence before it occurs. Secondary prevention programs take place immediately following violent acts and seek to minimize the short-term consequences of violence. Tertiary programs take place after violent events and deal with the long-term consequences. Although it is the case that primary prevention programs are often also universal programs, primary programs can also target a selected population. As a result, there is some variability in how youth violence prevention programs are classified within these dimensions.

One of the most important advances in the field of prevention over the last 25 years has involved methodological advances in evaluation of preventive interventions. Substantial progress has been made in the development of methods to evaluate the effects of prevention programs; these advances have resulted in the ability to determine whether a prevention program works to prevent violence, for whom, and under what conditions. This information

has filled critical gaps in our understanding of the effectiveness of prevention programs; it can inform decisions about how to implement evidence-based prevention programs in communities. A number of prevention programs have been rigorously evaluated, and many programs have demonstrated a significant impact in reducing violence and its associated risk factors. These advances give us greater confidence that violence can be addressed if evidence-based programs and strategies are widely implemented in communities.

One of the challenges to adoption of evidence-based programs in communities is that the literature on what works to prevent violence is fragmented. Rigorous evaluations of prevention programs are represented in a variety of disciplines and contexts. Another challenge to widespread adoption is the sheer volume of research evaluating prevention programs. It is difficult for practitioners, policymakers, and those who have the opportunity to select and implement evidence-based programs in communities to be able to interpret a varied and complex literature.

In addressing the issue of “what works,” systematic reviews and meta-analyses can provide critical information that synthesizes findings across evaluation studies. Systematic reviews and meta-analyses summarize findings and address possible inconsistencies in the literature. They constitute a critical step in the efforts to identify effective strategies in prevention. Most systematic reviews and meta-analyses include reviews of evaluation studies of single programs (e.g., Chan et al., 2004; Lipsey, 1992). Often, such reviews address specific categories of programs, or strategies. For example, reviews have examined the effectiveness of school-based programs (Wilson & Lipsey, 2007). This information is valuable for understanding the extent to which programs within those strategies are effective. However, some argue that in order to reduce violence in communities, comprehensive strategies that include multiple programs are necessary. Research indicates that prevention activities should attend to the accumulation of risk factors across multiple levels of the social ecology. While it is important to pay attention to individual- and relationship-level factors (e.g., early aggressive behavior, parental influences, and affiliation with delinquent peers), attention to the larger role sociocultural, economic, and community factors play in the development of youth violence is critical, particularly when attempting to generate community-wide impacts. Comprehensive prevention approaches have the potential to reduce risk factors and to enhance protective factors at the individual, relationship, and community levels.

Comprehensive approaches can be supported by identifying *strategies* or categories of programs that are effective in preventing violence. For communities to engage in strategic planning efforts to select evidence-based programs, they need information about the different types of programs that are effective. For the purpose of this paper, we use the term *strategies* to refer to categories of programs that use similar approaches, address similar risk factors, and/or use similar “delivery systems.” Information about the effectiveness of strategies can provide guidance to communities about the types of programs they should consider in their planning efforts. Additionally, summarizing research on the effectiveness of strategies imposes some structure to a diverse literature, in that it organizes findings across evaluations of different types of programs and approaches.

The present study involves a meta-review of the effectiveness of strategies in preventing violence. Similar to meta-analyses and systematic reviews, the purpose of a meta-review is to synthesize information across studies. In the case of a meta-review, the studies synthesized are systematic reviews and meta-analyses. Meta-reviews summarize the commonalities and differences in the major findings and conclusions of the included reviews. To date, three meta-reviews exist in fields related to youth violence (Green, Howes, Waters, Maher, & Oberklaid, 2005; Kumpfer & Alvarado, 2003; Nation et al., 2003). However, these meta-reviews focused only on programs specifically developed for emotional and mental health outcomes (Green et al., 2005), family-based approaches (Kumpfer & Alvarado, 2003), or simply identified program characteristics that were associated with effective prevention programs (Nation et al., 2003). To date, no meta-reviews have included the full range of programs that are intended to prevent youth violence; additionally, no meta-reviews have used both quantitative and qualitative approaches. Given the number of meta-analyses and systematic reviews currently available in the field of youth violence prevention, taking stock of this literature using both quantitative and qualitative approaches can inform: (a) the range of violence prevention strategies that have been addressed by meta-analyses and reviews; (b) the range of program effects; (c) the range in study quality among these research studies; and (d) the moderators of program effect sizes.

1.2. Goal of the study

The goal of this study was to conduct a meta-review of evaluations of behavioral and psychosocial approaches to prevent youth violence, using both quantitative and qualitative approaches, in order to describe the state of the field in evidence-based youth violence prevention. This meta-review summarized findings across reviews organized by strategy: treatment-specific, family-based, school-based, and community-based prevention strategies. Treatment-specific approaches include programs such as cognitive-behavioral therapy and social skills training that focus on children and adolescents in both clinical and school settings (e.g., Nangle, Erdley, Carpenter, & Newman, 2002). Family-based approaches aim to strengthen the relationships that children and youth have with their family members and also include improving parents' skills for managing child behaviors. An example of such a program is behavioral parent training (e.g., McCart, Priester, Davies, & Azen, 2006). School-based programs occur within school settings and focus on individual children, groups of children, or their peers (e.g., Powell, Muir-McClain, & Halasyamani, 1995; Wheeler, Keller, & DuBois, 2010). Finally, community-based approaches are those programs that occur outside of the family and school context and include things like mentoring and wilderness challenge programs (e.g., DuBois, Holloway, Valentine, & Cooper, 2002; Wilson & Lipsey, 2000). Another goal of this meta-review was to identify promising youth violence prevention strategies that are significantly related to reducing violence and related behaviors at each level of the social ecology and by prevention strategy (i.e., treatment-specific, family-based, school-based, and community-based programs).

2. Method

2.1. Search

A systematic search was conducted for all meta-analyses and systematic reviews of youth violence-related prevention programs. First, a list of keywords was generated to search scholarly databases. Keywords were derived from seminal articles in the youth violence literature (e.g., Wilson & Lipsey, 2007), and included terms such as: youth violence, aggression, delinquency, fighting, crime, prevention, intervention, and evaluation.¹ In order to narrow the search, certain terms were combined with those describing programs and program evaluation. For example, the terms “youth violence” and “prevention” were entered simultaneously in order to retrieve relevant articles. Using the generated list of keywords, a search was performed on the following electronic bibliographic databases: Cumulative Index to Nursing and Allied Health Literature (CINAHL), Cochrane, EMBASE, Education Resources Information Center (ERIC), Google Scholar, JSTOR, Medline, OVID, PsychINFO, PsychNET, PubMed, and the Social Sciences Citation Index. In addition, manual searches of the tables of contents in key journals in the field were conducted to capture newer publications (e.g., within the last year). Journals captured in this search included *Adolescence*, *Aggressive Behavior*, *Aggression and Violent Behavior*, *American Journal of Preventive Medicine*, *American Journal of Public Health*, *American Journal of Sociology*, *American Psychologist*, *Annual Review of Public Health*, *Applied and Preventive Psychology*, *Crime and Justice*, *Criminology*, *Developmental Psychology*, *Journal of Adolescence*, *Journal of Adolescent Health*, *Journal of Interpersonal Violence*, *Journal of Research in Crime and Delinquency*, *Violence and Victims*, and *Youth Violence and Juvenile Justice*. We also obtained studies that were not identified in our database searches from the reference lists of previously identified articles. The search for meta-analyses and systematic review articles spanned from 1950 through March 2009. A total of 129 reviews and meta-analyses² were identified through the search strategy.

2.2. Inclusion and exclusion criteria

2.2.1. Inclusion criteria—Articles were included in this study if: (a) the article was a meta-analysis or systematic review of youth violence prevention strategies/programs; (b) the studies included in the review/meta-analysis evaluated a prevention (primary, secondary, or tertiary) or intervention strategy/program that targeted either universal, selected, or indicated populations; (c) the studies reviewed included youth violence and/or aggression behavioral outcomes³; (d) the studies reviewed evaluated strategies at the individual, family, school, peer, or community levels; (e) the articles reviewed were written in English; and (f) the meta-analysis or review was published in 2009 or before.

2.2.2. Exclusion criteria—Studies were excluded if: (a) the review was not a systematic review (for example, descriptions of selected programs or specific strategies); (b) the article

¹A full list of the search terms is available from the authors upon request.

²To simplify language, the meta-analyses and systematic reviews included in this study will be labeled “reviews” unless we are referencing a specific meta-analysis or systematic review.

³We included studies that considered aggression, antisocial behavior, externalizing behavior, and youth violence. In all cases, reviews considered more than one of the behavioral outcomes and did not distinguish between violent and other types of behavior problems. Results should be interpreted with this in mind.

was a meta-review; (c) the meta-analysis or systematic review was an unpublished dissertation; (d) the meta-analysis or systematic review only included pharmacological interventions or treatments; (e) the meta-analysis or systematic review was specific only to bullying outcomes and did not separate out measures of aggression and youth violence from the non-physical violence outcomes⁴; and (f) the meta-analysis or systematic review examined only outcomes that are risk factors for violence and did not include measures of aggression and youth violence. Studies reviewing pharmacological interventions were also excluded because the focus of the current meta-review was on psychosocial and behavioral approaches.

Articles underwent a two-stage screening process. First, the abstracts of all articles were gathered and independently screened by at least two study team members who excluded articles that met the exclusion criteria listed above. Only those that both team members agreed upon were excluded from the study. Articles that were not excluded during the first stage of review were then retrieved and transferred into an electronic EndNote database to be coded by the study team. Second, two coders read the articles that were retained from the first stage and further excluded those that met the stated exclusion criteria. Of the initial 129 articles, 52 met the inclusion criteria; 37 were meta-analyses and 15 were systematic reviews. Seventy-seven other meta-analyses and systematic reviews were also considered, but they were excluded based on our exclusion criteria (i.e., Stage 2 of the screening process). Table 1 includes a general description of the 52 reviews included in this meta-review. A list of those excluded during Stage 2 of the screening process is available upon request.

2.3. Data extraction

A data extraction form (i.e., coding form) was developed by the study team and captured key pieces of information from each article. The form summarized information on the studies' content area, methods, findings, and study quality. Specifically, it included codes for the type of study (e.g., review, meta-analysis); the study objective; types of youth violence outcomes reported and how the authors defined them; the ecological targets of the prevention strategies reviewed (i.e., individuals, families, schools, peers, community), as well as the age of the population reviewed (e.g., early childhood, middle childhood, adolescence). Information regarding reporting methods for outcome variables (e.g., self-report survey, teacher survey, official records, and a description of those methods, if provided) and a description of the prevention approach (e.g., universal, primary) were also extracted from the articles.

In addition, the coding form captured details regarding the research design and analytic strategies used for each study, including a description of the method used to establish program effectiveness, how effect sizes were calculated (for meta-analyses), and the strength of the evidence as reported in the results. The code for the strength of evidence variable was based on the authors' assessment of the effect size. For meta-analyses, this was based on their estimate of effect size (e.g., Cohen's *d*) and the standard in the field for what constitutes a small, moderate, and strong effect. For qualitative reviews, we based our code on the

⁴When reviews did not separate the physical and non-physical violence outcomes, it was impossible to ascertain the program's effects on the physical youth violence outcomes that were a focus of this study.

authors' assessment of the effectiveness of the programs that they reviewed. In most cases, this was based off of experimental designs with reliable and valid measurement instruments. Finally, data extraction collected information regarding significant and non-significant results, as well as nuances and/or moderators of program impact, if reported in the review. Main conclusions of each article and a subjective description of the study's rigor and the strengths and/or limitations of the study were also coded.

Articles were coded by at least two study team members, and consensus meetings with the entire study team were held to describe the article and determine the level of agreement between the two coders for each code. Inter-rater reliability was 0.75 before consensus was reached. When the two coders disagreed on a particular rating, the entire coding team discussed the nature and the reasons for the disagreement. The particular aspect of the study under consideration was described by one of the two original coders, and the entire team discussed that aspect of the study in order to come to agreement on the code. This process ensured consistency across coders on how each aspect of the study was characterized and coded.

2.4. Study quality assessment

In addition to the data extraction form, the Assessment of Multiple Systematic Reviews (AMSTAR) was used to assess the quality of each study reviewed. The AMSTAR tool consists of 11 items that have adequate face and content validity for measuring the methodological quality of systematic reviews (Shea, Grimshaw, Wells, et al., 2007). The AMSTAR tool gauges whether duplicate study selection and data extraction were used, whether a comprehensive literature search was performed, and whether the scientific quality of the included studies was assessed and documented using a priori methods. Answer choices are “yes,” “no,” “can't answer,” and “not applicable.” An AMSTAR score was calculated by adding all of the “yes” responses for each article reviewed; the maximum score is 11. Inter-rater reliability on the AMSTAR measure was 0.92. When coders disagreed on an item, it was resolved through a consensus discussion as described above. In the analyses, both the AMSTAR scale and a categorical variable based on the AMSTAR rating were used to determine the relationship between program effects and study quality. Scores of 0 to 4 indicate that the review is of low quality; 5 to 8 indicate moderate quality; and 9 to 11 indicate high quality.

Finally, a qualitative database documenting the aims of each article reviewed, as well as the key findings, gaps and limitations, and the number of studies included in the review was created using information extracted from the coding form. Additionally, a database containing AMSTAR scores for each article reviewed was created.

2.5. Variables

2.5.1. Social ecology—For each article, study team members coded whether the meta-analysis or review included evaluations of programs that targeted the following levels of the social ecology: individual, family, schools, peers, and/or communities. Many of the reviews considered multiple levels of the social ecology, so the categories were not mutually exclusive. Examples of individual programs included social skills training and cognitive-

behavioral therapy. Family programs included behavioral parent training and home visitation. School programs included a range of approaches that occurred within the school setting and also targeted school environments. Programs that targeted peers included those that aimed to change social norms among peers and peer interactions, while community programs included those that changed community conditions (e.g., building social capital among community residents).

2.5.2. Prevention approach—The prevention approaches included in the articles reviewed in meta-analyses and systematic reviews were documented. Universal, selected, and indicated programs were captured, as well as information about the primary, secondary, and tertiary nature of the prevention programs.

2.5.3. Program type—After the coding occurred, it was clear that the articles tended to fit into one of five substantive categories based on the types of programs considered in the reviews and where they were administered. The categories included: (a) general, (b) treatment-specific, (c) family, (d) school-based, and (e) community-based programs. *General* youth violence reviews included a range of programs in their analyses and were not limited in terms of the types of prevention and intervention programs included. General youth violence reviews tended to include evaluations of various types of programs—from treatment-specific to family-based to school-based programs—in the sample of studies of each review. *Treatment-specific* reviews focused on evaluations of programs that treated violent behavior or risk factors for violence among children and adolescents. Examples of reviews in this category included those that summarized the effects of cognitive-behavioral therapy for antisocial behavior and the effects of individual child skills training in preventing antisocial behavior. *Family* reviews only included evaluations of programs that aimed to change family or parenting behaviors. Reviews in this category included evaluations of training programs to prevent disruptive behavior problems and delinquency and a review of the effectiveness of early childhood home visitation in the prevention of violence.

School-based reviews exclusively considered evaluations of prevention and intervention programs that occurred in the school setting, even if it was a treatment-specific approach that occurred in the school setting. Examples included a meta-analysis of peer mediation programs in educational settings and a systematic review of school-based secondary prevention programs for youth violence. Finally, *community-based* reviews considered evaluations of programs that occurred in the community and included a systematic review of mentoring programs for youth and a meta-analysis of wilderness challenge programs for preventing juvenile delinquency. To impose some order, the articles were categorized into one of these mutually exclusive groups. Our placement into the mutually exclusive categories was based on the content within each review. In few circumstances, a review could be placed into more than one category (e.g., a treatment-specific approach within schools). When this occurred, consensus was made among coders to place the review into one of the categories.

2.5.4. Rigor of included studies—Study rigor of the reviews included in this meta-review was coded by indicating whether the article explicitly included studies that utilized randomized controlled trial (RCT) evaluation designs, quasi-experimental designs (e.g.,

longitudinal studies, comparison groups formed through non-randomization procedures such as propensity scores), or relied on correlational/non-experimental evidence (e.g., pre/post-testing with no comparison group) to draw conclusions regarding program effectiveness.

2.6. Data analysis

Descriptive analyses were performed to summarize the reviews included in the current study. Based on the range of topics that the reviews considered, the descriptions of the strength of effectiveness of the youth violence prevention approaches were categorized in the following ways: (a) by the meta-analysis/systematic review distinction; (b) by levels of the social ecology; (c) by prevention approach (i.e., universal/selected/indicated and primary/secondary/tertiary); (d) by program type (e.g., individual, family, school-based, community-based); (e) by study type (i.e., randomized control trials only, quasi-experimental designs, correlational/non-experimental studies and combinations of the three); and (f) by study quality (according to the AMSTAR rating). In order to test whether significant between-group differences existed, ANOVAs with Bonferroni post-hoc comparisons were performed on the evidence for program effectiveness for the distinctions listed in (b)–(f) above. The same approach was taken to examine whether there were between-study differences in the AMSTAR ratings based on the characteristics listed in (b)–(e) above. In addition, the qualitative data are included in order to better describe the studies and the range of programs they considered in their respective reviews, particularly in the description of moderators of effect sizes.

3. Results

3.1. General description of sample studies

The 52 reviews included in the current study captured a range of youth violence-related outcomes, including general youth violence (e.g., physical assault, weapon carrying, etc.), externalizing behaviors, criminal activity, aggression, and antisocial behavior. For the purpose of this meta-review, the term youth violence is used to describe all of these outcomes, making note of when meta-analyses or reviews used narrower definitions of youth violence. The reviews included a mean of 65.63 studies (range=5–443 studies). Seventy-seven percent contained programs that targeted the child and/or adolescent, 65% contained programs that intervened with the family, and a smaller proportion contained programs that intervened with schools (40.38%) and peers (36.54%). Relatively few of the reviews (N=5; 9.6%) included programs that intervened at the community-level. Of the reviews that mentioned program effect sizes, 50% had a moderate effect on measures of youth violence, 24% showed weak effects, 10% showed strong effects, and one meta-analysis demonstrated a strong iatrogenic effect (a meta-analysis of evaluations of Scared Straight; Petrosino et al., 2003). Those that showed strong effects included reviews of: (a) cognitive-behavioral approaches for hyperactivity/impulsivity (Robinson, Smith, Miller, & Brownell, 1999); (b) school-based intervention to decrease disruptive behavior (Stage & Quiroz, 1997); (c) peer mediation programs (Burrell, Zirbel, & Allen, 2003); some universal school-based prevention programs (Hahn et al., 2007); and behavioral parent training/parenting interventions (Serketich & Dumas, 1996; Woolfenden et al., 2004). Five types of reviews were identified through coding: general (N=9), family (N=15), treatment-specific (N=8),

school-based (N=15), and community-based programs (N=5). These align with the prevention strategies described above. Below is a summary of the program effect sizes by these prevention strategies.

3.1.1. General youth violence prevention programs meta-analyses and reviews

—The general category included nine reviews that were inclusive of a wide range of programs, without a specific focus for program type. For example, Catalano, Berglund, Ryan, Lonczak, and Hawkins (2004) reviewed the effectiveness of positive youth development programs, which can include strategies such as mentoring, school-based programs, and family-specific approaches. Based on the wide range of programs included in the reviews, it was challenging to discern patterns of findings among the studies included in the general category. Of the nine general articles, five were systematic reviews (Catalano et al., 2004; Chan et al., 2004; Fields & McNamara, 2003; Greenwood, 2008; Limbos et al., 2007). Four meta-analyses found weak effect sizes for diversion programs (Gensheimer, Mayer, Gottschalk, & Davidson, 1986), prevention programs for conduct and oppositional defiant disorders (Grove, Evans, Pastor, & Mack, 2008), and delinquency treatment (Lipsey, 1992; Wilson, Lipsey, & Soydan, 2003) on violence-related outcomes. Results from the systematic reviews ranged from moderate (Catalano et al., 2004) to weak (Limbos et al., 2007), with the other systematic reviews showing that the strength of effects depended on the strategy used. For example, Chan et al. (2004) found that effectiveness was reported in 33% of primary prevention programs, 40% of secondary programs, and 83% of tertiary programs; however, the authors noted that the number of studies included in their review limited their interpretation of intervention effects.

3.1.2. Family programs meta-analyses and reviews—Of the 15 reviews of family-based prevention program evaluations, two found strong effects, nine found moderate effects, and three demonstrated weak effects. Of the two that found strong effects, both investigated program effects on narrowly-defined behaviors and populations: one focused on the relationship between behavioral parent training and antisocial behavior among preschool and elementary school children (Serketich & Dumas, 1996), while the other investigated the impact of family and parenting interventions on conduct disorder and delinquency among children and youth between the ages of 10 and 17 (Woolfenden et al., 2004). Those reviews that demonstrated moderate program impacts tended to investigate a wider range of behaviors (e.g., delinquency or aggression) among a wider age range of children and youth (e.g., 18 and younger, youth between 1 and 16 years of age; Barlow & Stewart-Brown, 2000; Farrington & Welsh, 2003; Lundahl, Risser, & Lovejoy, 2006; Maughan, Christiansen, Jenson, Olympia, & Clark, 2005; McCart et al., 2006; Piquero, Farrington, Welsh, Tremblay, & Jennings, 2008; Reyno & McGrath, 2006; Thomas & Zimmer-Gembeck, 2007; Yoshikawa, 1995). Finally, all three reviews that demonstrated weak effects focused on programs that intervened with families when the children were between the ages of 0 and 3 and focused on a wide range of behaviors that included behavior problems and disruptive behaviors (Barlow & Parsons, 2003; Bernazzani, Cote, & Tremblay, 2001; Bilukha et al., 2005). One systematic review of parent training interventions did not provide any description of the overall strength of program effects (Webster-Stratton & Reid, 2006).

3.1.3. Treatment-specific programs meta-analyses and reviews—All eight treatment-specific prevention program evaluations were meta-analyses of cognitive behavioral therapy (CBT), multisystemic therapy (MST), and/or life skills training programs. A majority (N=6) reported moderate effects on youth violence (Beck & Fernandez, 1998; Bennett & Gibbons, 2000; Curtis, Ronan, & Borduin, 2004; Garrett, 1985; Lösel & Beelmann, 2003; Sukhodolsky, Kassinove, & Gorman, 2004), while only two meta-analyses demonstrated weak effects (Littell et al., 2005; Quinn, Kavale, Mathur, Rutherford, & Forness, 1999). The two meta-analyses that found weak effects reviewed studies focused only on selected and indicated youth and included only children and adolescents with pre-existing social, emotional, or behavioral disorders (Littell et al., 2005; Quinn et al., 1999). Of the meta-analyses reporting moderate effects on youth violence, a majority (N=6) reviewed studies utilizing CBT, and effect sizes ranged from 0.36 to 0.70. The one meta-analysis that found moderate effects and did not examine CBT effectiveness found that an average MST participant surpassed 70% of controls with regard to individual and family functioning scores (Curtis et al., 2004).

3.1.4. School-based programs meta-analyses and reviews—There were more school-based program reviews than any of the other four types of prevention strategies included in this meta-review. Of the 15 reviews of evaluations of school-based programs, the majority were meta-analyses (N=11; Burrell et al., 2003; Derzon, 2006; Ferguson, San Miguel, Kilburn, & Sanchez, 2007; Gansle, 2005; Mytton, DiGuseppi, Gough, Taylor, & Logan, 2006; Park-Higgerson, Perumean-Chaney, Bartolucci, Grimley, & Singh, 2008; Robinson et al., 1999; Scheckner, Rollin, Kaiser-Ulrey, & Wagner, 2002; Stage & Quiroz, 1997; Wilson, Gottfredson, & Najaka, 2001; Wilson & Lipsey, 2007). As reported by 11 reviews and meta-analyses, school-based programs generally had moderate to strong effects on youth violence-related outcomes. Three meta-analyses found weak effects (Ferguson et al., 2007; Park-Higgerson et al., 2008; Wilson et al., 2001). Ferguson et al. (2007) focused their review on bullying prevention programs and found these programs had a small, yet significant, effect on bullying and violence in schools. In their meta-analysis, Park-Higgerson et al. (2008) found a small, significant effect for single-approach programs, but not for multiple approach ones (i.e., those programs that involved parents, peers, and/or the community). Finally, Wilson et al. (2001) found small positive net effects on problem behaviors—including school drop-out or nonattendance—with these effects being three times larger than those for delinquency and alcohol/drug use. Two articles also found small, yet significant, effects of youth violence prevention programs on alcohol and drug use (Hahn et al., 2007; Wilson et al., 2001).

A majority of the programs described in the school-based program reviews and meta-analyses were classroom curriculum-based interventions and peer mediation/conflict resolution and conduct behavior modification (CBM) programs. The peer mediation programs were shown to be successful in bettering school climate, reducing perceptions of conflict in schools, and decreasing the occurrence of disciplinary action required by administrators (Burrell et al., 2003). Robinson et al. (1999) found strong evidence for the efficacy of CBM programs in reducing aggressive behavior among indicated populations in school settings.

3.1.5. Community-based programs meta-analyses and reviews—All five reviews of evaluations of community-based programs were meta-analyses. Four of the five meta-analyses of community-based programs found moderate effects on youth violence outcomes. Of those, two meta-analyses focused on mentoring programs (DuBois et al., 2002; Tolan, Henry, Schoeny, & Bass, 2008), one focused on after-school programming (Durlak & Weissberg, 2007), and another reviewed wilderness challenge programs (Wilson & Lipsey, 2000). The meta-analyses of mentoring programs reported the approach was the most effective at curbing delinquency and aggression, compared to other violence outcomes (Tolan et al., 2008) and that participants with low resource backgrounds were most likely to benefit (DuBois et al., 2002). While Durlak and Weissberg (2007) reported moderate effects, they noted that after-school programs that utilized an evidence-based social and/or personal skills training were the only programs associated with positive outcomes. Only one meta-analysis assessed the effects of wilderness challenge programs on youth violence outcomes. The authors reported that of the 28 studies included in the meta-analysis, on average 29% of program participants recidivate, compared to 37% of control participants (Wilson & Lipsey, 2000).

The final meta-analysis included in the community-based programming strategy assessed the effects of “Scared Straight” and other juvenile awareness programs on youth offending behaviors. Petrosino et al. (2003) found that participants in “Scared Straight” or similar programs were 1.5–1.96 times more likely to commit a crime and/or be delinquent at first follow-up than those in the control group ($p < .01$). This result shows a strong and significant iatrogenic effect on violence-related outcomes.

3.2. Between group differences in strength of effectiveness

Between-group differences in the strength of program effectiveness were tested by six factors: (a) whether the study was a meta-analysis or systematic review; (b) the levels of the social ecology; (c) prevention approach; (d) program type (i.e., general, treatment-specific, family, school-based, and community-based); (e) whether the studies limited their samples to those with RCTs versus other types of study designs; and (f) study quality according to the AMSTAR rating. Table 2 contains the basic descriptive statistics by each of these factors. Comparisons were performed using ANOVAs with Bonferroni posthoc comparisons and found only three between-group differences in the studies' ratings of the strength of program effectiveness. Meta-analyses had a lower strength of effectiveness rating compared to systematic reviews, but this difference was not statistically significant ($F = 3.55$; $p = 0.07$). Additionally, the meta-analyses and reviews that focused on family-based approaches ($F = 3.28$; $p = 0.08$) and included programs targeting the family ($F = 3.45$; $p = 0.07$) had a higher strength of effectiveness compared to those that did not.

3.3. Between group differences in the AMSTAR rating

Between-group differences in the AMSTAR rating were tested by five factors: (a) whether the study was a meta-analysis or systematic review; (b) the levels of the social ecology; (c) prevention approach; (d) program type; and (e) whether the studies limited their samples to those with RCTs versus other types of study designs. The overall mean on the AMSTAR

scale across all studies was 7.02 (SD=2.11). There were no significant differences in the AMSTAR rating with regard to the five factors under consideration.

3.4. Moderators

Most meta-analyses and systematic reviews (N=42) tested moderators of program effectiveness, or whether effect sizes varied according to one or more variables. In meta-analyses, moderators were tested using the standard methods in the field (e.g., random effects moderator tests). For systematic reviews, moderators were pulled from the individual evaluation studies and described as part of the review. In order to comprehensively describe these moderators, we summarize the moderator results from both meta-analyses and systematic reviews below. These moderators included individual and family characteristics (e.g., child age, family socioeconomic status), program characteristics (e.g., program duration), and study characteristics (e.g., evaluation study design). Table 3 summarizes whether the reviews showed that a particular moderator had a significantly larger, smaller, or a curvilinear relationship with the effect size. We also noted when a review showed mixed effects for the moderator and whether it was not significant. In the sections below, we elaborate on the moderators that had inconsistent results across reviews.

3.4.1. Individual and family moderators—Moderators of program effectiveness included participants' individual and family characteristics. Eighteen of the reviews examined child age as a possible moderator of program effects, and the results were inconsistent across reviews with most showing larger effect sizes for younger children or no significant effects. Those that found a larger effect size for older children tended to be reviews of behavioral parent training or child cognitive behavioral therapy (CBT). Older children may be more responsive to CBT which may explain this result.

Four reviews investigated whether sex of the program participants moderated effect size with inconsistent results across reviews. One found larger effect sizes for boys (Howard, Flora, & Griffin, 1999), another found larger effect sizes for girls (Sukhodolsky et al., 2004), while the remaining two found that effect size did not significantly vary by sex (Grove et al., 2008; Maughan et al., 2005). Specifically, in their review of classroom-based violence prevention curriculum, Howard et al. (1999) found initial significant differences for middle school and high school boys (compared to girls) that did not endure over time (Howard et al., 1999). Sukhodolsky et al. (2004) found that the percentage of boys that were in the CBT condition was negatively related to improvements in anger (or, the more boys in the group, the less their anger improved over time; Sukhodolsky et al., 2004). Three reviews also explored racial/ethnic differences and generally found smaller effect sizes for minority participants.

In addition, two reviews investigated parenting stress (measured by the Parenting Stress Index which captures stress associated with parent-child interactions) and family negative life stress (measured by parent reports of stressful life events) and found smaller effect sizes for studies that had sample populations with higher rates of parenting stress and negative life stress (Reyno & McGrath, 2006; Webster-Stratton & Reid, 2006). Four reviews also explored family poverty as a moderator of program effect size and generally found smaller effect sizes for impoverished families. In addition, three studies explored family structure as

a moderator and found that those from single parent families had smaller effect sizes (Lundahl et al., 2006; Reyno & McGrath, 2006) while one found no significant differences (Serketich & Dumas, 1996). Also, Reyno and McGrath's (2006) meta-analysis explored whether family size, parental education, parental psychopathology, and maternal age moderated effect sizes. They found smaller effect sizes among larger families, parents with less education, parents scoring higher on measures of psychopathology, and older mothers.

3.4.2. Program moderators—The included reviews investigated a wide range of program characteristics as moderators of program effects. These program moderators were categorized into the following five characteristics: (a) prevention approach (e.g., universal/selected/indicated); (b) intervention type (behavioral, cognitive-behavioral, etc. as defined by the authors of the reviews); (c) individual versus group-based approaches; (d) single versus multi-component approaches; and (e) program dosage/duration (number of sessions/duration of program in weeks). The findings based on these seven program characteristics are described below.

The reviews consistently found larger effect sizes for programs that target selected and indicated populations with one exception. Curtis et al. (2004) found that MST was equally effective for all participants. However, the nature of MST is that it is a program that is delivered specifically to very high-risk youth. Therefore, evaluations of MST by definition would include a restricted range of participants. In addition, eight reviews explored whether effect sizes varied for behavioral (e.g., using negative or positive reinforcement to change behaviors) compared to non-behavioral interventions (e.g., person-centered therapy). Generally, behavioral interventions had larger effect sizes compared to non-behavioral ones. In addition to the behavioral/non-behavioral comparison, seven reviews compared the effectiveness of behavioral programs that also included a cognitive (e.g., approaches designed to change unhealthy thought patterns) and/or social skills (e.g., techniques designed to improve communication skills) component to behavioral programs without one and found that those with a cognitive component had larger effect sizes than those without one.

Seven reviews explored differences in individual versus group-based approaches, with inconsistent results. A majority found that group-based programs had smaller effect sizes or no significant differences between the two approaches. Only one review of group-based parent education programs found that group-based programs had larger effect sizes (Barlow & Stewart-Brown, 2000). The reviews that explored multicomponent programs also found inconsistent results. Multicomponent programs are those that intervene at multiple levels of the social ecology. A majority of the reviews found no significant differences between the two program types while one found mixed effects (Molina, Dulmus, & Sowers, 2005), and one found smaller effect sizes for multicomponent programs (Park-Higgerson et al., 2008). However, Yoshikawa (1995) found that programs that combined early education and family support were more likely to have significant long-term effects than non-combined programs.

The reviews that explored program intensity or dosage consistently found that those of higher dosage or intensity tended to have larger effect sizes or it did not significantly moderate program effect sizes. Those reviews that explored whether program duration

moderated effect sizes found inconsistent results. Most found that longer programs had significantly larger effect sizes or that duration was not a significant moderator of program effect size. The two reviews that found that longer programs had smaller effects were reviews of very specific programs: Maughan et al. (2005) investigated the effectiveness of behavioral parent training and found that programs using one to five sessions were more effective than those using more than five sessions, and Wilson and Lipsey (2000) performed a meta-analysis on wilderness challenge programs and found those of longer durations had smaller effect sizes for delinquency and antisocial behavior outcomes.

3.4.3. Study moderators—The included meta-analyses and reviews also investigated a wide range of study characteristics as moderators of program effects. These study moderators were categorized into the following seven characteristics: (a) random assignment studies; (b) control group characteristics (e.g., treatment as usual, no treatment control, etc.); (c) reporting method (e.g., self reports, parent reports, etc.); (d) how the outcome measure was assessed (e.g., behavioral measures, knowledge/attitudes, official records, etc.); (e) length of study follow-up period; (f) sample size; and (g) study attrition. The findings based on these seven study characteristics are described below.

Most of the reviews found that studies using RCTs tended to show larger effect sizes compared to other types of designs. However, two reviews found smaller effect sizes for RCTs (Garrett, 1985; Maughan et al., 2005), and one found no significant differences in effect size between RCTs and other types of studies (Serketich & Dumas, 1996). In addition to study design, several reviews explored whether measurement considerations (e.g., reporter, type of measure) moderated effect size. Most found larger effect sizes for official records compared to other types of measures, while one that investigated the effectiveness of child skills training found the opposite (Lösel & Beelmann, 2003). A majority of the evaluations included in Lösel and Beelmann's review included participants under the age of 12, when children may be less likely to come into contact with agencies required to file official records. In addition, most of the reviews that included evaluations using parent reports had significantly larger effect sizes compared to those using independent reports (i.e., observations and administrative records). Two meta-analyses found that evaluations using self-reports had significantly smaller effect sizes compared to those using parent/teacher reports and official records (Grove et al., 2008; Wilson & Lipsey, 2007), and one meta-analysis examining the efficacy of child cognitive-behavioral interventions for antisocial behavior found no significant differences in effect size by reporter (Bennett & Gibbons, 2000).

Finally, those reviews that explored specific measurement aspects found that the more items in the measure, the smaller the effect size (Wilson & Lipsey, 2007), and the longer period of time covered by the measure (e.g., one week, one month, one year recall), the smaller the effect size (Lipsey, 1992). Also, four reviews explored the length of the study follow-up period with inconsistent results. Two found that the longer the follow-up period, the smaller the effect size (Hahn et al., 2007; Lösel & Beelmann, 2003); while one found that the longer the follow-up period for behavioral parent training, the larger the effect size (Maughan et al., 2005). Furthermore, one meta-analysis examining the prevention of symptoms of oppositional defiant and conduct disorders found a curvilinear relationship between the time

since follow-up and effect size (i.e., the effect size decreased from 6 to 12 months, returned to six month gains at 24 months, and increased at 36 months; Grove et al., 2008).

In addition to measurement considerations, several reviews explored whether sample size and attrition moderated the size of program effects. Generally, the smaller the sample size, the larger the effect size. One review found no significant differences in effect size by sample size (Bennett & Gibbons, 2000). Also, two reviews found that the greater the study attrition, the smaller the effect size (Lipsey, 1992; Wilson & Lipsey, 2007).

4. Discussion

The goal of this study was to conduct a systematic meta-review of evaluations of behavioral and psychosocial approaches to prevent youth violence. Another goal was to identify promising youth violence prevention strategies that were significantly related to violence and related behaviors at each level of the social ecology and by prevention approach (i.e., treatment-specific, family-based, school-based, and community-based programs). Six meta-analyses and systematic reviews found strong program effects and they represented a range of strategies from cognitive-behavioral therapy and behavioral parent training to peer mediation and other school-based interventions. Most of the reviews yielded moderate or weak program effects, and one review of “Scared Straight” and similar programs found an iatrogenic effect on youth offending Petrosino et al. (2003). Meta-analyses found marginally smaller effect sizes compared to systematic reviews. The reviews that included programs which targeted the family showed marginally larger effects than those that did not. Finally, a majority of the reviews scored in the moderate range of the AMSTAR Rating Scale, indicating that most reviews were of adequate quality.

Most reviews were conducted on family and school-based programs (15 reviews and 15 meta-analyses). The reviews in the family category tended to include a limited range of programs (i.e., parenting training). It would be useful to know if a wider range of family-focused youth violence-related strategies (e.g., family therapy) are as effective as parent training in preventing youth violence. Also, much research has focused on school-based prevention where a large number of the prevention and intervention programs have been implemented and evaluated. The focus on schools has been largely driven by accessibility. While it is important to know the effectiveness of school-based youth violence prevention programs, there is also a need to invest in programs and evaluations in other contexts that may be effective in youth violence prevention strategies. Few reviews examined programs at the community level that included strategies such as Crime Prevention through Environmental Design (CPTED; Mair & Mair, 2003) which alter aspects of the community in order to prevent youth violence.

In addition, the included meta-analyses and systematic reviews explored a range of moderators of effect sizes that included one or more of the following categories: (a) individual and family; (b) program characteristics; and (c) study characteristics. Comparatively, few studies explored individual and family moderators. Those that did found mixed effects based on child age and sex. Few reviews considered nonlinear effects for these moderators. Given the mixed findings for age, it is possible that the relationship between age

and effect size is curvilinear, and future work should explicitly test for a curvilinear relationship between age and effect size. Another potential explanation for the mixed findings for age is that different types of strategies may be differentially effective for youth at different stages of the life-span.

Additionally, one meta-analysis of parent training efficacy found that stressed and disadvantaged families may find it more challenging to take advantage of what programs have to offer (Reyno & McGrath, 2006). One meta-analysis explored family stress and SES as a moderator of program effect size. Future research should replicate this result. While this finding needs to be further explored, it may be necessary to address family stress in order for youth violence prevention programs to have a larger effect on youth violence and related outcomes. This might mean that stressed and disadvantaged families may need additional training or support, such as strategies for coping with stress and gaining access to resources such as public assistance, in order to fully engage in programs geared toward preventing youth violence.

The findings around program and study moderators of program effect sizes confirmed several well-established findings, while also providing insight about areas in need of further research for future reviews. First, several of the reviews explored whether the target population explained variation in program effect sizes. This meta-review confirms that programs that target selected and indicated populations tend to have larger effect sizes than those that do not. This finding has been replicated in multiple studies (e.g., DuBois et al., 2002; Ferguson et al., 2007; Fields & McNamara, 2003). Another consistent finding was that programs that contained a cognitive-behavioral component tended to have larger effect sizes than those without one or with only a behavioral component. Based on these findings, a logical next step for this area is to understand subgroup or individual differences in responses to youth violence prevention programs among at-risk groups (e.g., sex, ethnicity, impulsive students) and among cognitive-behavioral programs so that interventions can be designed with these differences in mind (Farrell, Henry, & Bettencourt, 2011).

In addition, the included reviews tended to find that evaluations of programs using RCTs generally had larger effect sizes. The two reviews that found smaller effect sizes for RCTs state that this finding was expected because, in theory, more rigorous studies should lead to more conservative estimates of effects (Garrett, 1985; Maughan et al., 2005). This highlights the need for high quality evaluations of prevention programs in order to increase the likelihood of detecting effects on youth violence and related outcomes. A small number of meta-analyses also explored whether measurement considerations explained variations in program effect sizes (e.g., Barlow & Parsons, 2003; Wilson & Lipsey, 2007) and found that both how the outcome was measured and who reported were related to effect size. Specifically, Wilson and Lipsey (2007) found that the more items in the measure and the longer the recall time assessed in the measure (e.g., one day, one week, one year), the smaller the effect size. Future work should continue to consider and explore these findings.

Some of the findings from the review were somewhat unexpected. First, we found that multicomponent programs tended to have smaller effect sizes than single-component approaches. Although multicomponent programs were not explicitly defined in the reviews,

this finding was surprising because it is reasonable to expect that intervening at multiple levels or in multiple aspects of an individual's life would increase the likelihood that a program or mix of programs would have a larger effect on youth violence. The reviews summarized here found the opposite. It may be that those individuals and families that were involved in multicomponent programs were overwhelmed by the demands placed on them by these programs, making them less likely to respond. Future work should continue to explore the effectiveness of multicomponent and longer programs so that we can understand when and under what conditions multicomponent and programs are necessary in order to prevent youth violence.

There are several limitations of this meta-review. One particular limitation is that there are no standards in the field around conducting meta-reviews. Some have argued that meta-reviews or “overviews of reviews” best meet the needs of clinicians who often have to decide between a range of options in order to best treat a patient or client (Thomson, Russell, Becker, Klassen, & Hartling, 2011). While such criteria exist for meta-analyses and systematic reviews, there is a need to have a similar set of standards for meta-reviews. It would be useful to have guidance about how to combine findings from multiple systematic reviews and meta-analyses. In addition, because the current study summarized other reviews and meta-analyses, it was difficult to obtain the information needed in order to make sense of some of the contradictory findings. For example, there were many inconsistent findings around individual/family, program, and study moderators. Because we did not summarize the original evaluation studies that were included in the reviews, we did not have the information available to us in the reviews in order to adequately explain the studies. Those reviews that included a wide range of effect size moderators—from program and study moderators—and those reviews that included specific and detailed information on their inclusion and exclusion criteria were more useful in trying to gauge the factors that may explain inconsistencies in findings across the reviews. Guidance about how to best use the information contained in the reviews would be useful. The need for such guidance is likely to increase as the number of systematic reviews and meta-analyses in the field continues to grow.

In addition, most of the reviews that were included were published in the late 1990s and the early to mid 2000s. While there was some breadth in the nature of the programs considered in these reviews, a majority considered both family-based and school-based programs. Within these categories, there was some overlap in the specific programs considered. In other words, there is a lack of independence between many of the reviews included here. This overlap could impact the reviews' overall findings as well as our own. For example, the effects summarized in our meta-review could be based on a small number of programs that were evaluated multiple times and represented in multiple reviews. The implication is that while at first glance the field of evidence-based programs for youth violence prevention seems large, the reviews do not represent independent groups of studies. However, there is not complete overlap in the samples of studies represented, which indicates that as the broader evaluation literature is “sliced” in different ways, reviews of each of those sub-samples come to very similar conclusions within the broad categories of programs. That indicates that there is some consistency in the overall findings within each category, for example for the school-based programs, family programs, etc. Furthermore, in our results,

we attempted to note when reviews considered a limited number of programs. We found that the family-based category of reviews was primarily limited to parent training and noted that those results should be interpreted with this in mind. However, there is a need for some reviews to consider a wider range of programs.

Despite these limitations, we still found that most of the reviews of youth violence-related prevention programs had moderate effects on a serious outcome that carries large social and economic consequences. Our results have implications for practitioners charged with preventing or curbing youth violence and other related behaviors. Based on the reviews that found strong effects, our results suggest that selected and indicated programs are particularly effective. In addition, intervening with families and parents may be a viable prevention strategy. For family programs, the strongest effects on aggression and delinquency were found for preschool and elementary-age youth (rather than early childhood). This suggests that strategies that are intended to prevent child and youth aggression and antisocial behavior should utilize programs that involve families with children over the age of 3 and focus on parent training. Treatment-specific reviews indicate that programs that focus on cognitive-behavioral approaches or MST (which also uses CBT techniques) have moderate positive effects. Given the complexity of these types of treatment strategies, community efforts to implement these evidence-based approaches should incorporate efforts to ensure high-quality implementation and treatment fidelity.

In addition, it is also important to address aggressive, disruptive, or violent behaviors within schools that use a range of classroom-based and peer mediation strategies. Based on our meta-review, the implementation of conduct behavior modification and peer mediation programs yielded the best results for youth violence outcomes within schools. Practitioners should consider programs with similar characteristics when deciding among programs to implement within schools. Reviews of community-based programs indicate that while there are moderate positive effects, they are attributable to specific program types or components. For example, while after-school programming in general was not effective, after-school programs that involved delivery of an evidence-based intervention were. These findings indicate that community-based programs would be most effective when implementing evidence-based programs rather than generic service delivery.

In conclusion, meta-reviews are important for the field in order to summarize “what works” to prevent youth violence perpetration. They are a complement to meta-analyses and systematic reviews, which tend to focus on specific types of program evaluations (e.g., treatment-specific approaches). In recent years, there has been an emphasis placed on utilizing evidence-based programs to maximize the likelihood that a program will reduce youth violence perpetration. Information gleaned from this meta-review can inform prevention efforts and can guide the field in determining next steps in program development and evaluation.

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Table 1

Included studies (N=52).

Authors	Type of review	Number of studies included	Program type	Main outcomes of interest	Prevention approach ^a	Social ecology ^b	Strength of effectiveness	AMSTAR rating
Barlow and Parsons (2003)	Meta-analysis	5	Family	Emotional and behavioral problems, aggression, externalizing	US/S	F	Weak	High
Barlow and Stewart-Brown (2000)	Systematic review	16	Family	Temper tantrums, aggression, non-compliance, externalizing behaviors	S/PS	F	Moderate	Moderate
Beck and Fernandez (1998)	Meta-analysis	50	Treatment-specific	Anger, aggression	I/PST	I	Moderate	Moderate
Bennett and Gibbons (2000)	Meta-analysis	30	Treatment-specific	Antisocial behavior, aggression	SI/PST	I	Moderate	Moderate
Bemazzani et al. (2001)	Systematic review	7	Family	Disruptive behavior, conduct disorder, delinquency, stealing, truancy, aggression	US/P	F	Weak	Moderate
Bilukha et al. (2005)	Systematic review	27	Family	School violence, delinquency, crime, other violent behavior, intimate partner violence, child maltreatment, suicide	S/PS	F	Depends on strategy	High
Burrell et al. (2003)	Meta-analysis	77	School	Fighting, suspensions, expulsions, other disciplinary actions, school climate	USI/PST	I, P, S	Strong	Moderate
Catalano et al. (2004)	Systematic review	83	General	Problem behaviors, delinquency, school suspension and dropout, positive youth development factors	US/-	I, F, P, S	Moderate	Low
Chan et al. (2004)	Systematic review	31	General	Homicide, criminal activity, rape or sexual assault, gang fighting, aggression, bullying	USI/PST	I, F	Depends on strategy	High
Clayton et al. (2001)	Systematic review	30	School	Conflict, vandalism, school discipline problems, fighting, delinquency, bullying	US/PS	I, F, P, S	Moderate	Low
Curtis et al. (2004)	Meta-analysis	11	Treatment-specific	Criminal activity, incarceration, status offenses, drug use, delinquency, antisocial behavior	SI/PST	I, F, P	Moderate	Moderate
Derzon (2006)	Meta-analysis	83	School	Aggression, criminal activity fighting, suspensions, weapon carrying, antisocial behavior	USI/PST	I, F, P, S	Moderate	Moderate
DuBois et al. (2002)	Meta-analysis	55	Community	Emotional problems, problem behaviors, criminal activity, social competence, risk behaviors	SI/PS	I, F, P, C	Moderate	High

Authors	Type of review	Number of studies included	Program type	Main outcomes of interest	Prevention approach ^a	Social ecology ^b	Strength of effectiveness	AMSTAR rating
Durlak and Weissberg (2007)	Systematic review	73	Community	Problem behaviors, drug use, non-compliance, aggression, delinquency, conduct problems	U/P	I, P, S, C	Moderate	Moderate
Farrington and Welsh (2003)	Meta-analysis	40	Family	Delinquency, antisocial behavior	SI/PST	F	Moderate	Moderate
Ferguson et al. (2007)	Meta-analysis	42	School	Aggression, externalizing, youth violence, bullying	US/P	I, P, S	Weak	Moderate
Fields and McNamara (2003)	Systematic review	n.s. ^c	General	Physical force, threatened violence, aggression	USI/PST	I, F, P, S, C	n.s. ^c	Low
Gansle (2005)	Meta-analysis	20	School	Aggression, antisocial behavior, conduct problems, externalizing, anger problems, conduct problems	USI/PST	I	Moderate	Moderate
Garrett (1985)	Meta-analysis	84	Treatment-specific	Criminal activity, recidivism, psychological and academic adjustment	I/ST	I, F, P	Moderate	Moderate
Gensheimer et al. (1986)	Meta-analysis	44	General	Delinquency, recidivism	I/T	I	Weak	Moderate
Greenwood (2008)	Systematic review	n.s. ^c	General	Violent crime, delinquency	USI/PST	I, F, P, S	Depends on strategy	Low
Grove et al. (2008)	Meta-analysis	306	General	Overt and covert violent behaviors, property violations, aggression, status violations, oppositional behavior	US/P	I, F, P, S	Weak	Moderate
Hahn et al. (2007)	Systematic review	53	School	Youth violence, aggression, criminal activity, conduct disorder, delinquency, suspensions, disciplinary referrals	U/PST	I, F, P, S	Strong	High
Howard et al. (1999)	Systematic review	13	School	Fighting, aggression, bullying, suspensions, violence attitudes, problem behaviors, criminal activity, delinquency	U/P	I, F, P, S	Moderate	Moderate
Limbos et al. (2007)	Systematic review	47	General	Criminal activity, youth violence	USI/PST	I, F, P, S, C	Weak	Moderate
Lipsey (1992)	Meta-analysis	443	General	Antisocial behavior, criminal activity, delinquency	USI/PST	I, F, S	Weak	Moderate
Littell et al. (2005)	Meta-analysis and Systematic review	8	Treatment-specific	Antisocial behavior, drug use, psychiatric symptoms, school attendance and performance, aggression, psychological adjustment, family functioning	SI/ST	I, F	Weak	High
Lösel and Beelmann (2003)	Meta-analysis	84	Treatment-specific	Antisocial behavior, aggression, violence, social skills, cognitive skills	USI/PS	I	Moderate	High

Authors	Type of review	Number of studies included	Program type	Main outcomes of interest	Prevention approach ^a	Social ecology ^b	Strength of effectiveness	AMSTAR rating
Lundahl et al. (2006)	Systematic review	n.s. ^c	Family	Non-compliance, problem behaviors, externalizing behavior, aggression	USI/PS	I, F, P, S, C	Depends on strategy	Moderate
Maughan et al. (2005)	Meta-analysis	63	Family	Externalizing behavior, antisocial behavior	USI/P	F	Moderate	High
McCart et al. (2006)	Meta-analysis	71	Family	Overt behavior problems (yelling, temper tantrums, aggression, physical destruction, non-compliance), covert behavior problems (lying, stealing), oppositional defiant disorder, conduct disorder	SI/ST	I, F	Moderate	Moderate
Molina et al. (2005)	Systematic review	7	School	Aggression, cheating, lying, dating violence, bullying, physical violence, verbal harassment	S/PS	I, F, P, S	Moderate	Moderate
Myrton et al. (2006)	Meta-analysis	56	School	Aggression, violent behavior, fighting, bullying	SI/ST	I, S	Moderate	High
Park-Higgerson et al. (2008)	Meta-analysis	29	School	Aggression, anger, violent behavior, delinquency, externalizing behaviors	US/PS	I, S	Weak	High
Petrosino et al. (2003)	Meta-analysis and Systematic review	9	Community	Criminal activity, recidivism	SI/ST	I	Strong (iatrogenic)	High
Piquero et al. (2008)	Meta-analysis	55	Family	Behavior problems, antisocial behavior, delinquency	US/PS	F	Moderate	High
Quinn et al. (1999)	Meta-analysis	35	Treatment-specific	Emotional or behavioral disorders, social competence, externalizing and problem behavior	SI/PS	I	Weak	Moderate
Reyno and McGrath (2006)	Meta-analysis	31	Family	Oppositional behavior, aggression, conduct problems	SI/T	F	Depends on strategy	Moderate
Robinson et al. (1999)	Meta-analysis	23	School	Aggression, hyperactivity, impulsivity	SI/ST	I, S	Strong	High
Scheckner et al. (2002)	Meta-analysis	16	School	School violence, fighting, problem behavior, hostility, delinquency, aggression	USI/PST	I, F, S	Depends on strategy	Moderate
Serketich and Dumas (1996)	Meta-analysis	26	Family	Temper tantrums, non-compliance, antisocial behavior, aggression	SI/S	F	Strong	Moderate
Stage and Quiroz (1997)	Meta-analysis	99	School	Aggression, disruptive classroom behavior	USI/PST	I, S	Strong	Low
Sukhodolsky et al. (2004)	Meta-analysis	40	Treatment-specific	Oppositional behavior, anger-related problems, antisocial behavior	SI/ST	I	Moderate	Moderate
Thomas and Zimmer-Gembeck (2007)	Meta-analysis and Systematic review	24	Family	Child behavior problems, aggression, tantrums, opposition	SI/S	F	Depends on strategy	Moderate

Authors	Type of review	Number of studies included	Program type	Main outcomes of interest	Prevention approach ^a	Social ecology ^b	Strength of effectiveness	AMSTAR rating
Tolan et al. (2008)	Meta-analysis	39	Community	Aggression, criminal activity, externalizing problems, delinquency, drug use	SI/PS	I	Moderate	High
Webster-Stratton and Reid (2006)	Systematic review	n.s. ^c	Family	Antisocial behavior, conduct disorder, substance abuse, mental illness, delinquency, violence, criminal activity	S/S	F	Depends on strategy	Moderate
Wilson et al. (2001)	Meta-analysis	165	School	Conduct problems, problem behaviors, alcohol and drug use, dropout and nonattendance	USI/PST	I, P, S	Weak	High
Wilson and Lipsey (2000)	Meta-analysis	28	Community	Antisocial behavior, recidivism, delinquency	SI/PST	I	Moderate	Moderate
Wilson and Lipsey (2007)	Meta-analysis	249	School	Fighting, bullying, person crimes, disruptive behavior, conduct disorder	USI/PST	I, F, P, S	Moderate	High
Wilson et al. (2003)	Meta-analysis	305	General	Delinquency, arrests, behavior problems, psychological adjustment	SI/PST	I, F, P	Weak	Moderate
Woolfenden et al. (2004)	Meta-analysis	8	Family	Behavior problems, criminal activity, conduct disorder, delinquency	SI/ST	I, F	Moderate	High
Yoshikawa (1995)	Systematic review	40	Family	Delinquency, weapon carrying, antisocial behavior, fighting, bullying, cruelty to animals, theft, rape, truancy, other criminal activity, conduct disorder	US/P	I, F	Depends on strategy	Moderate

^aU = universal; S = selected; I = indicated/P = primary; S = secondary; T = tertiary.

^bI = individual; F = family; P = peer; S = school; C = community.

^cn.s. = not stated.

Table 2

General descriptives.

Study characteristics	Count	Percentage
<i>Study type</i>		
Review	15	28.85
Meta-analysis	37	71.15
<i>Type of program</i>		
General	9	17.31
Family	15	28.85
Treatment-specific	8	15.38
School-based	15	28.85
Community-based	5	9.62
<i>Ecological targets^a</i>		
Individual	40	76.92
Family	34	65.38
Peers	19	36.54
School	21	40.38
Community	5	9.62
<i>Prevention approach^a</i>		
Universal	26	50.00
Selected	45	86.54
Indicated	35	67.31
Primary	36	69.23
Secondary	39	75.00
Tertiary	28	53.85
<i>Evaluation design included</i>		
RCT only	11	21.15
RCT/quasi/correlational	41	78.85
<i>AMSTAR quality rating</i>		
Low (0–4)	6	11.54
Moderate (5–8)	29	55.77
High (9–11)	17	32.69

^aFor these variables, reviews can have multiple codes. Thus, the percentages in the Ecological Targets and Prevention Approach categories do not add up to 100%.

Table 3

Individual, family, program, and study moderators of effect sizes (counts).

Individual and family characteristics	Larger ES	Smaller ES	Curvilinear ES	Mixed effects	Not significant
Age: younger	5	4	4	0	5
Sex: male	1	1	0	0	2
Race: minority status	0	2	0	0	1
Parenting stress: higher	0	1	0	0	0
Family life stress: higher	0	1	0	0	0
Family poverty: higher	0	3	0	0	1
Family structure: single-parent	0	2	0	0	1
Program characteristics	Larger ES	Smaller ES	Curvilinear ES	Mixed effects	Not significant
Prevention approach: high-risk (selected and indicated)	8	0	0	0	0
Prevention approach: selected	2	0	0	0	0
Prevention approach: indicated	3	0	0	0	0
Prevention approach: secondary (versus primary)	1	0	0	0	0
Intervention type: behavioral	8	0	0	0	0
Intervention type: cognitive intervention	7	0	0	0	0
Intervention type: individual-based (versus group-based)	3	1	0	0	3
Intervention type: multi-component (single-component)	1	1	0	1	3
Program intensity or dosage: higher	2	0	0	0	3
Program duration: longer	7	2	0	0	5
Study characteristics	Larger ES	Smaller ES	Curvilinear ES	Mixed effects	Not significant
Study design: RCT	8	2	0	0	1
Measurement: official report	4	1	0	0	0
Measurement: parent report	6	1	0	0	0
Measurement: self-report	0	2	0	0	1
Measurement: more items in a scale	0	1	0	0	0
Measurement: longer period of time covered in measure	0	1	0	0	0
Measurement: longer duration between assessment periods	1	2	1	0	0
Measurement: small sample size	5	0	0	0	1

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Individual and family characteristics	Larger ES	Smaller ES	Curvilinear ES	Mixed effects	Not significant
Study attrition: higher	0	2	0	0	0